

REMARKS/ARGUMENTS

Claims 1-9 have been canceled. New Claims 10-21 are active in the case.

Reconsideration is respectfully requested.

The present invention relates to a thermal separation process in which (meth)acrylic monomer is separated in a separating column that has an ascending gaseous stream and a descending liquid stream that contains polymerization inhibitor.

Specification Amendments

The specification has been amended in order to introduce the required subsection headings into the text, as well as to provide the text with a brief description of the drawings. Page 6, line 19 of the specification has also been corrected by identifying the cover of the double-T support of Figure 2 as numeral 2 as shown in the figure. None of the amendments that have been made introduce new matter into the case. Entry of the amendments into the record is respectfully requested.

Drawing Amendments

Figures 1 and 3, also including Figure 5, have been amended in compliance with the Examiner's request to indicate that these drawings are illustrations of the prior art. As to the matter of "Element (3)" in Figures 2 and 4, applicants concur that the element is not a double T-support or a U-shaped support. Rather the elements are, as described at page 6 lines 22, et seq, structures that ease the drainage of polymerization-inhibited liquid droplets which collect on the underside of a mass transfer tray that rests of a double-T support. Neither the drawings nor the specification errs in depicting and explaining what elements (3) are. Accordingly, no amendments to the text or drawings are necessary.

Claim Amendments

Original Claims 1-9 have been canceled in favor of new Claims 11-18. New Claims 19-21 are supported by the text of the specification at page 12, lines 24-27 and page 10, lines 36 et seq. Entry of the new claims into the record is respectfully requested.

Claim Rejection, 35 USC 112, Second Paragraph

As to the matter of the preamble of Claim 1, it is believed that the presentation of new Claim 10 obviates the issues that has been raised with respect to the wording of the preamble. Further, the presentation of new Claims 12, 13 and 15-17 is believed sufficient to obviate the issue that has been raised with respect to Claims 3, 5, 7 and 8 concerning the support elements.

As to item (c) of the rejection, the same is obviated in new Claim 10 by the recitation of a covering means for the shadow regions of the internals of the separating column.

Concerning the issue of item (d), the text on pages 6 and 7 provides a discussion of the coverings that are provided for T-shaped supports and U-shaped supports, and these coverings are shown in Figs 2 and 4 denoted by numerals 2 and 4 respectively. The example on page 17 of the text provides a description of the covering of double-T shaped supports with steel sheets. Also there is a clear description of stainless steel sheets that are used as covering materials which are welded in position. Accordingly, the specification provides an enabling description of the covering means for support elements.

Finally, original Claim 2 has been corrected by the presentation of new Claim 11. Support for the correction is found at the bottom of page 5 of the text of the specification. Withdrawal of the stated ground of rejection is respectfully requested.

Invention

The present invention as claimed is directed to a process for the thermal separation of (meth)acrylic monomer by passing at least one ascending gaseous stream into a separating column containing a sequence of mass transfer trays and a liquid stream that contains dissolved polymerization inhibitor which descends the separating column, wherein at least one of the streams comprising (meth)acrylic monomers. The inner surface of the separating column is sprayed with the descending liquid stream that contains the dissolved polymerization inhibitor in the separating column, and the separating column having internals, certain areas of which are shadow regions which are equipped by covering means which prevent contact of the shadow regions with (meth)acrylic monomers and consequently undesired polymerization of monomer.

Prior Art Rejection

Claims 1-9 stand rejected based on 35 USC 103(a) as obvious over EP-937488, EP-A 1044957, DE-A10300816 and EP-A 759316. This ground of rejection is respectfully traversed.

It is clear that the technology of the present invention is in the area of the rectification of mixtures that comprises (meth)acrylic monomers by the distillation of a gaseous phase that may contain (meth)acrylic monomer and which ascends the distillation column and a descending liquid phase which at least contains a polymerization inhibitor. Contact of the two phases occurs along the walls of the column and on internals of the column. Much of the internal surfaces of the column are normally wetted by the liquid stream which descends the column, thereby achieving the inhibition of (meth)acrylate monomer polymerization as a result of contact of the monomer with the inhibitor. However, there are some internal regions

of the column that face away from the descending liquid phase, which means that these surfaces do not have any, or very little, polymerization inhibitor thereon. Accordingly, polymer material forms on these surfaces which represents a loss of monomer, as well as complications in the thermal separation of (meth)acrylate monomer. In fact, as the columns and internals are presently configured, there are always parts or portions of the surfaces of the internals that are so disposed in the column as to constitute "shadow regions" which do not receive a spray of descending liquid. The present invention is directed to exactly this problem. The solution to the problem which the present invention provides is the identification of these "shadow regions" and the "covering" of these regions with a covering means such as taught in the example on page 17 of the specification. The covering means, in fact, is effective in isolating the shadow regions from contact with (meth)acrylate monomer, thereby preventing or at least very substantially reducing the build-up of polymer in the shadow regions.

The prior art cited by the Examiner, on the other hand, although relevant to the technical field of the invention, **provides absolutely no teaching or suggestion to one of skill in the art** of providing the "shadow regions" of the internals of a distillation column with some means of covering or isolating the regions from contact with monomer thereby preventing polymer build-up in the column. In order to say, as the Examiner has, that "it would have been obvious to one of ordinary skill to cover or completely remove an element from the system when its use is not required" is to use the teachings of the present invention in hindsight which is improper. Moreover, it is apparent that the Examiner has some misunderstanding of the invention when she states that: "to completely remove any element from the system when its use is not required." The present invention does not embody the removal of one or more components of the internals from the column. The "removal" to which the description of the present invention refers is the isolation of the shadow regions, as

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a result of being provided with cover, from materials in the gaseous and liquid phases within the column; not the removal of components from the column! Accordingly, the outstanding ground of rejection is believed obviated and withdrawal of the rejection is respectfully requested.

It is believed that the application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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